

FIG. 1

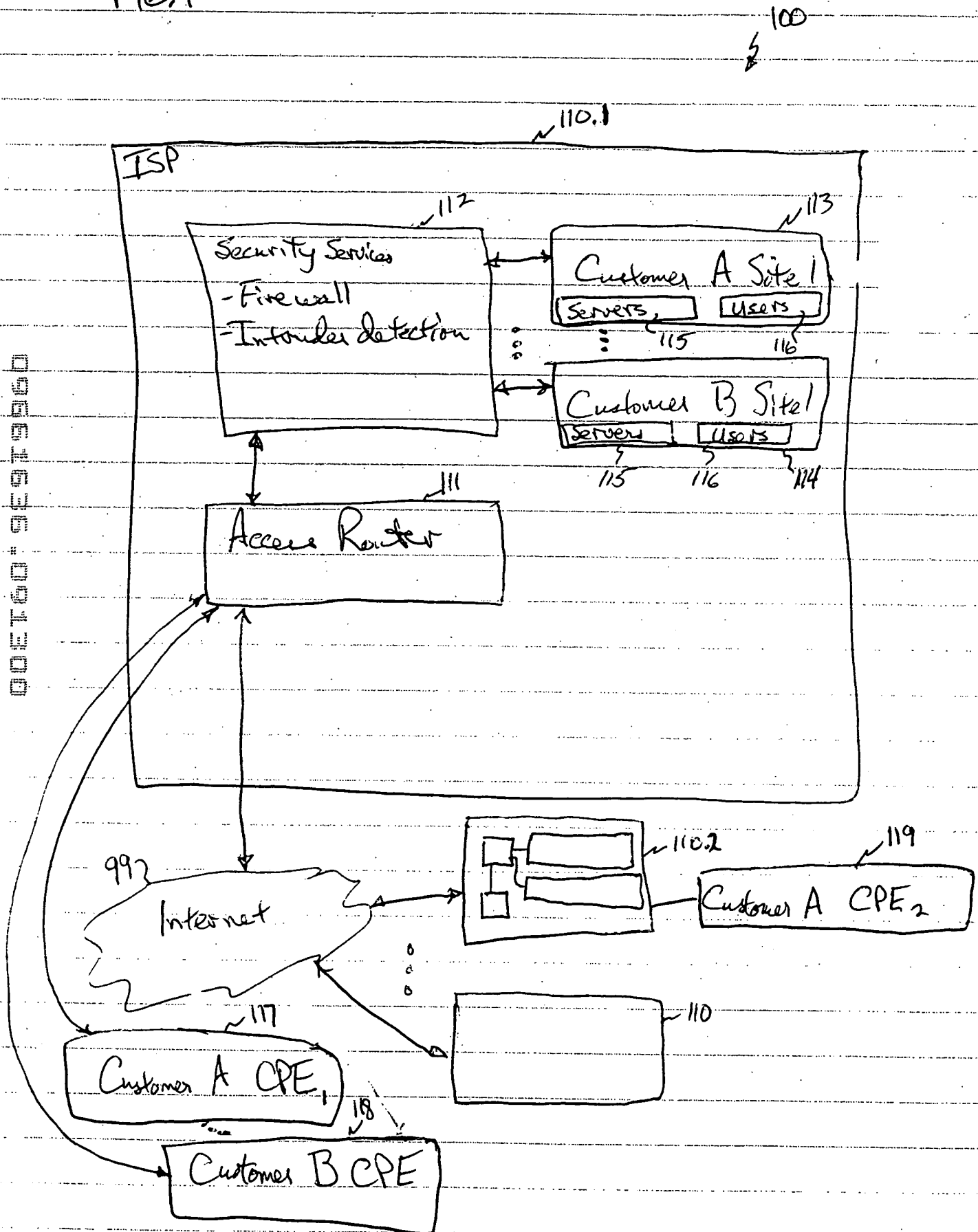
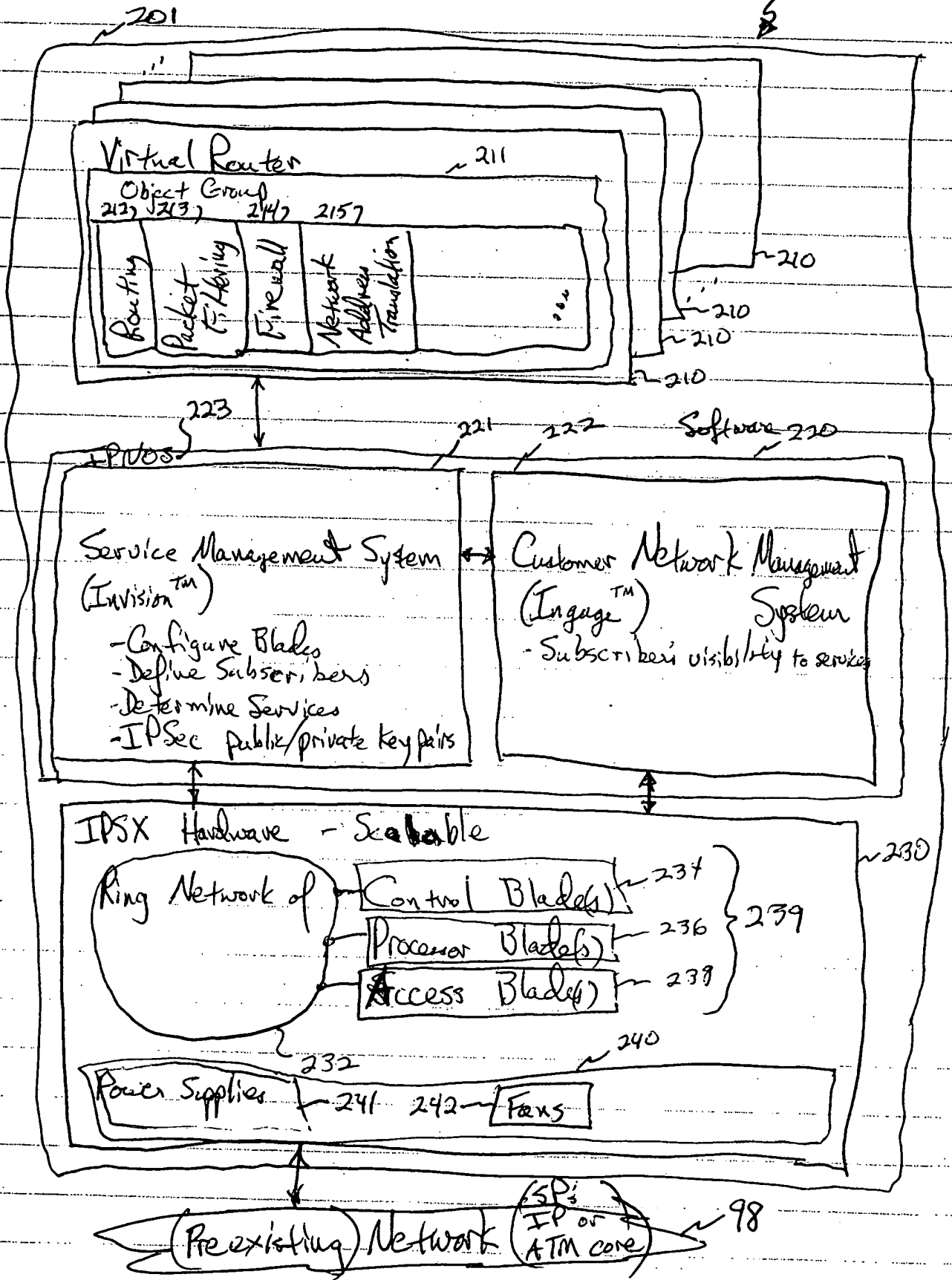


FIG. 2

SP Network 200



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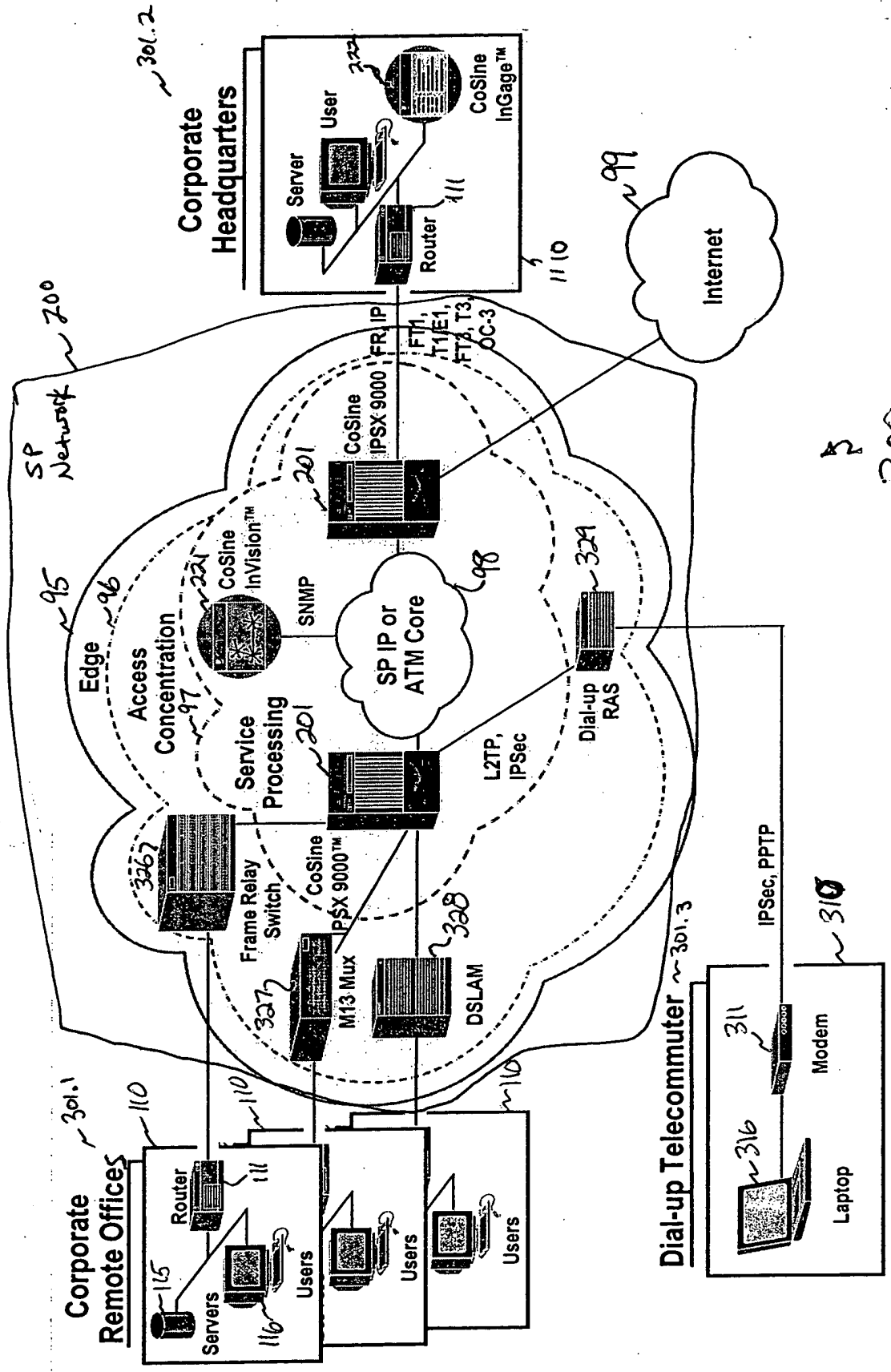
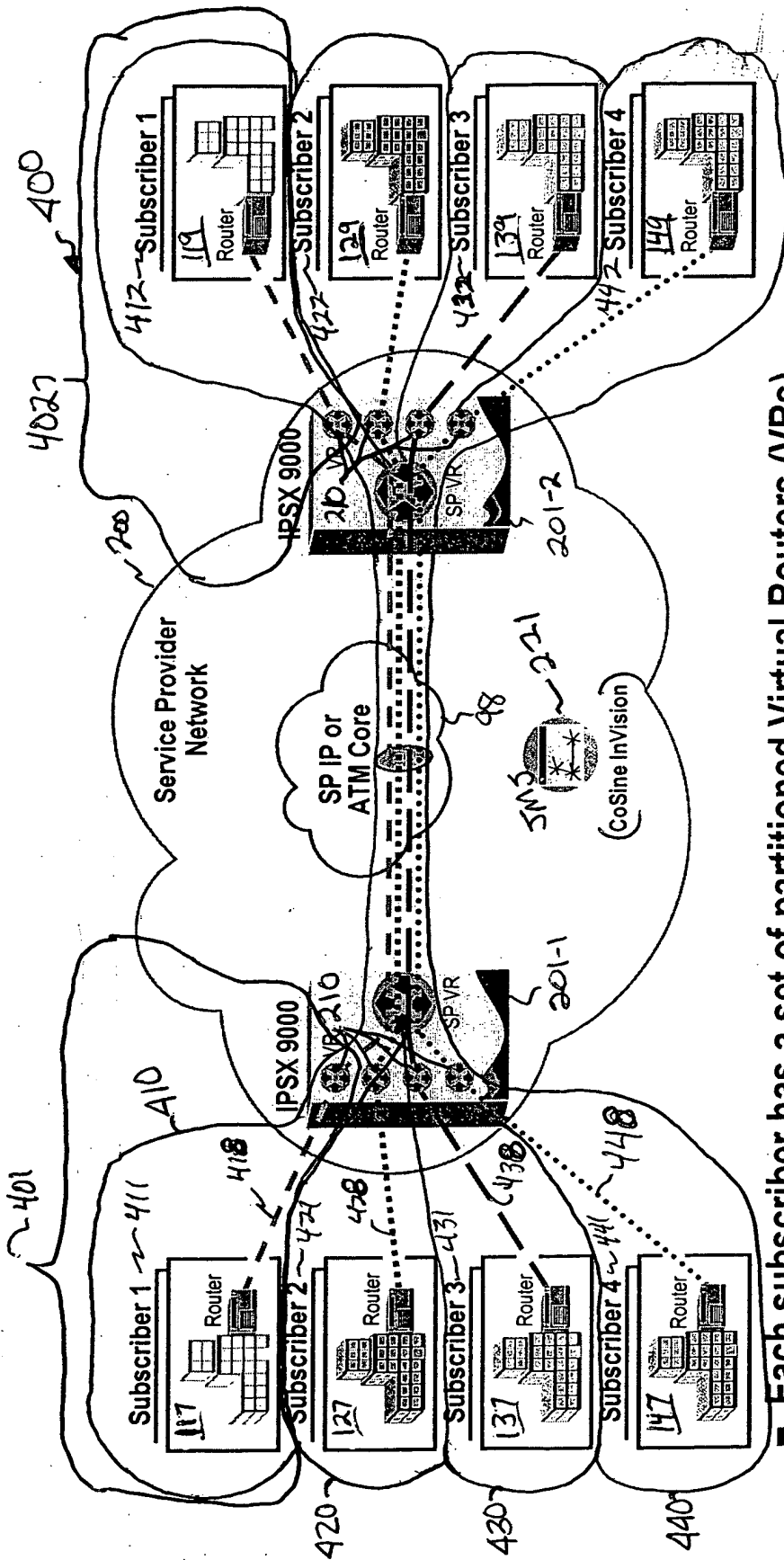
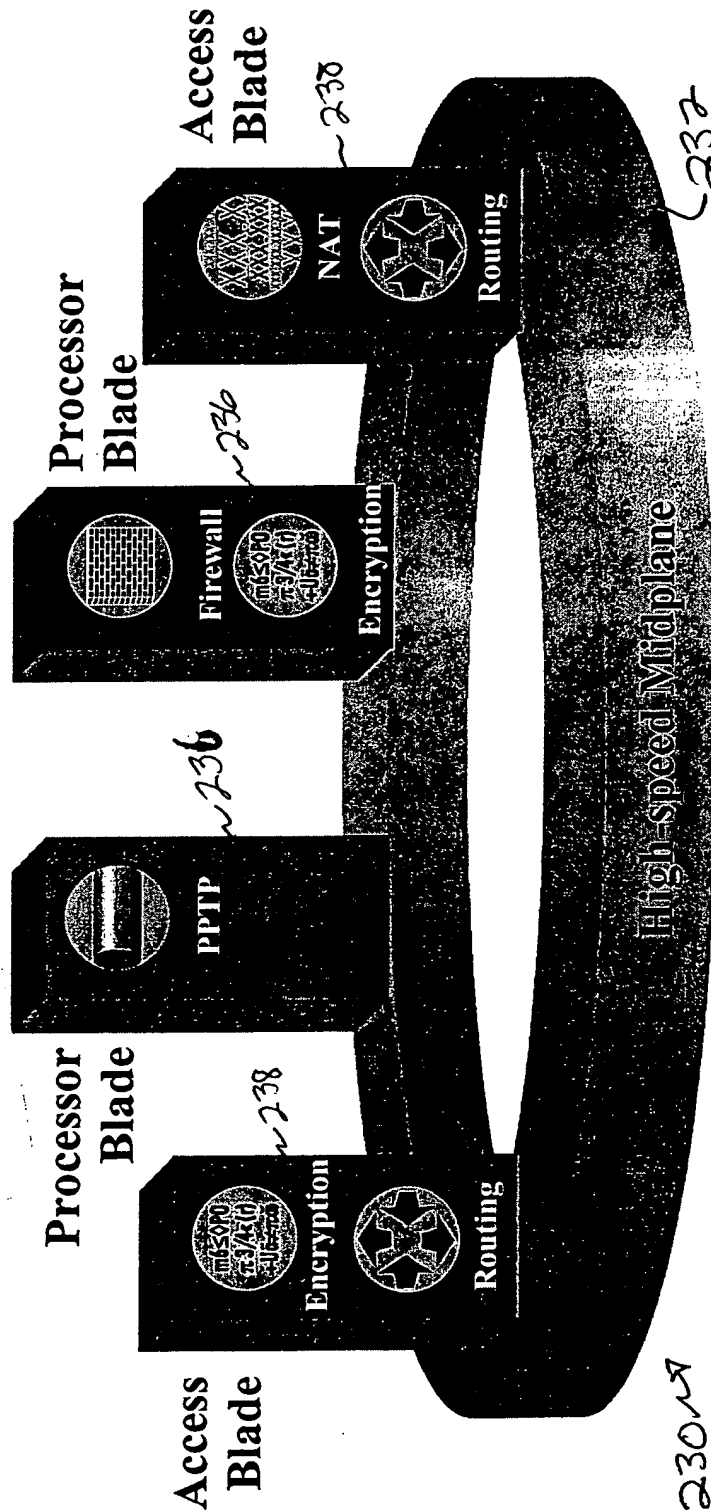


FIG. 3



- Each subscriber has a set of partitioned Virtual Routers (VRs)
- Each VR is the equivalent of an independent hardware router
- VR as an object group enables customized services per subscriber
- InVision allows ease of service provisioning and maintenance of services across all IPSX units in a SP network
- IP Network Operating System's (IPNOS) open Application Program Interface (API) enables new services to be continually added to the platform

FIG. 4



- Each subscriber has a set of partitioned Virtual Routers (VRs) <sup>210</sup>
- Each VR is the equivalent of an independent hardware router
- VR as an object group enables customized services per subscriber
- InVision allows ease of service provisioning and maintenance of services across all IPSX units <sup>200</sup> in a SP network <sup>220</sup>
- IP Network Operating System's (IPNOS) open Application Program Interface (API) enables new services to be continually added to the platform

FIG. 5

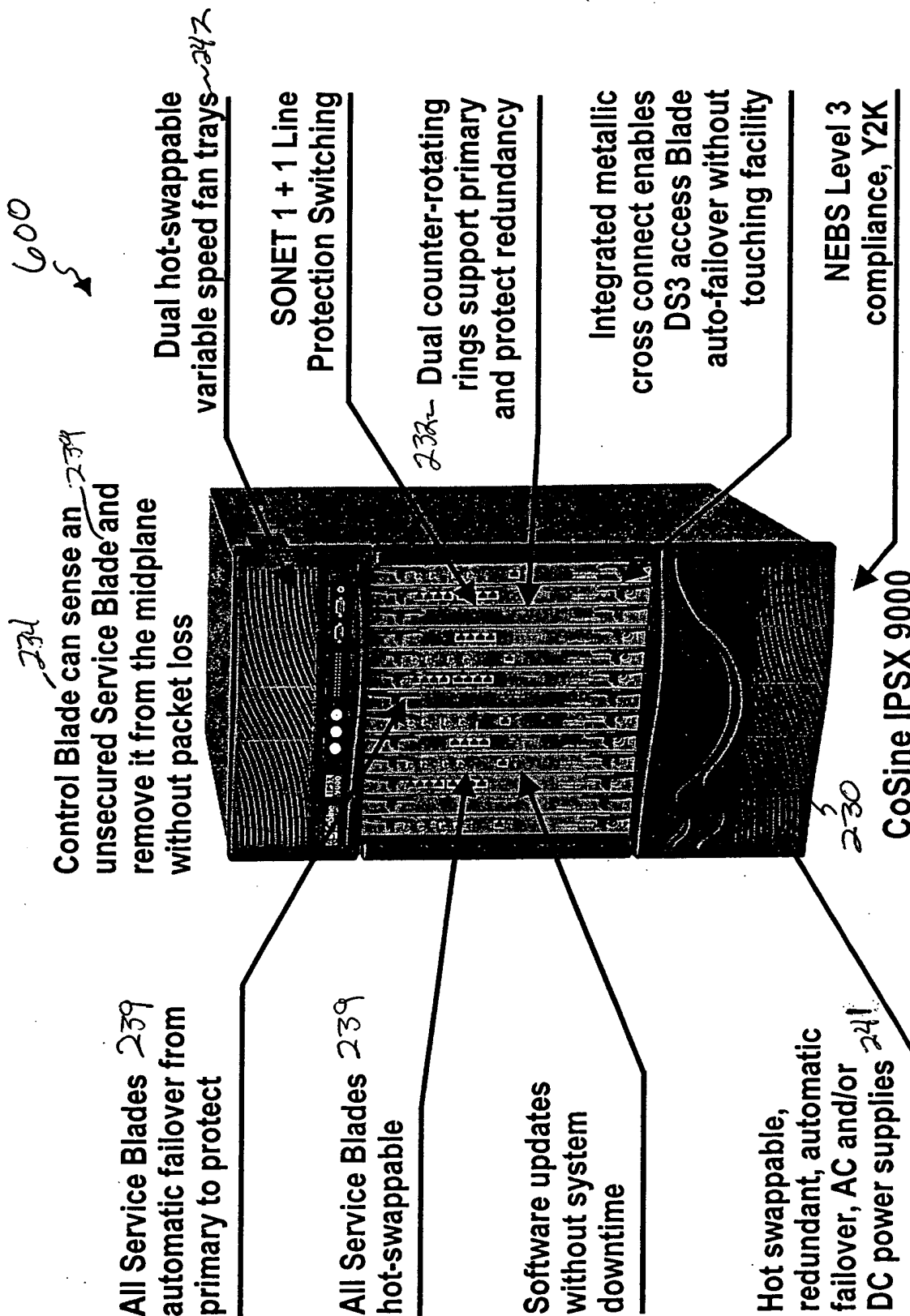
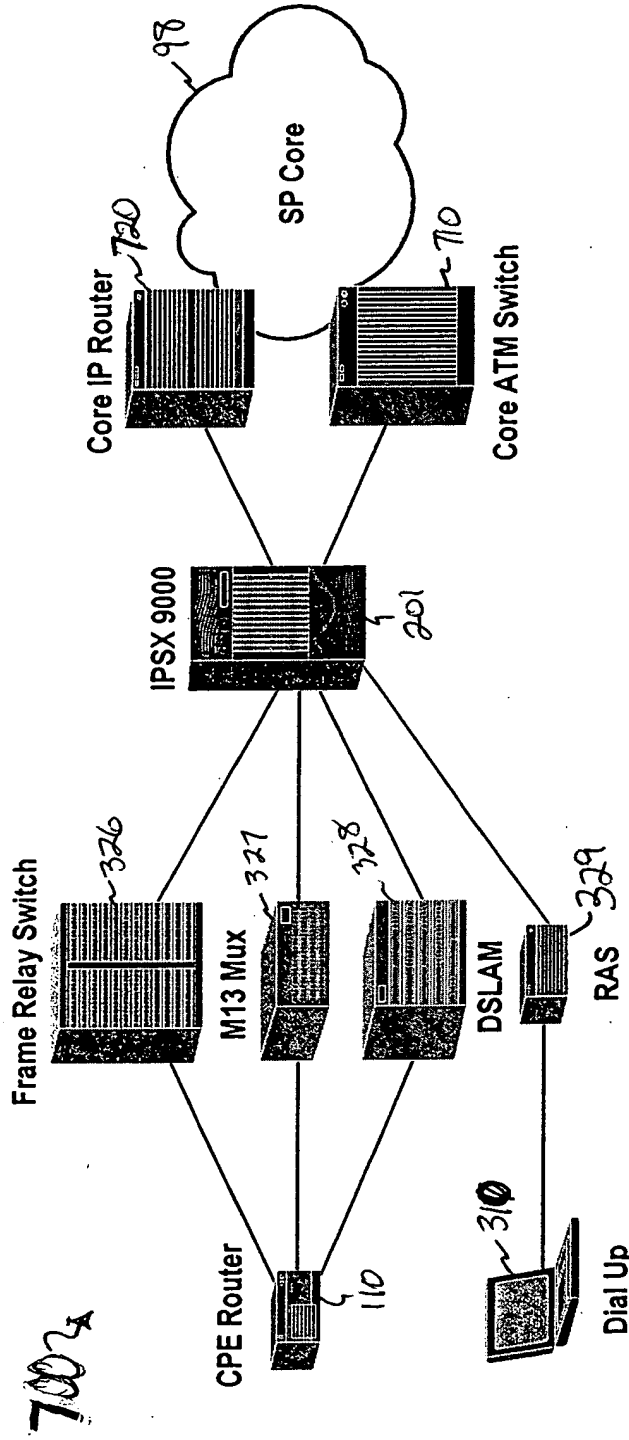


FIG. 6



- Support for a long list of technology standards
- Interoperates with existing access concentration and core network elements
- Offer interworking between Frame Relay and IP networks
- Network Address Translation (NAT) enables enterprise subscribers to leave their network addressing untouched
- Merge IP and legacy networks into one with COS guarantees

FIG 27

## ■ Hardware:

- ▼ 26-slot, two-sided chassis ~ 230
- ▼ 22 Gbps packet ring midplane ~ 831
- ▼ Three types of Service Blades ~ 832
  - Control ~ 234
  - Access ~ 238
  - Processor ~ 236
- ▼ Specialized processing Daughter Cards for Service Blades
- ▼ Power supply system ~ 240

## ■ Software

- ▼ IP Network Operating System (IPNOS) ~ 223
- ▼ Virtual Routing ~ 810
- ▼ IP Service Suite ~ 820
  - IPsec (Dial and Dedicated) ~ 821
  - Application Proxy Firewall ~ 822
  - Network Address Translation (NAT) ~ 823
  - PPTP Tunnel Termination ~ 824
  - Bandwidth Management ~ 825
  - Multiprotocol Label Switching (MPLS)
  - Frame Relay to IPsec Interworking ~ 827

FIG. 8





Fig. 10

The diagram illustrates a network architecture for a Service Provider NOC. At the top, the **Service Provider NOC** (Sun E250 w/ Provider-1) is connected to the **SP Backbone** via **OC3s**. The **SP Backbone** is a central cloud-like structure. Below it, two **POP** (Point of Presence) sites are shown: **POP #1** and **POP #10**. Both POPs are connected to the **SP Backbone** via **OC3s**. Each POP contains a **Cisco 7513** router. From each POP, a **T1** line (56 Kbps) connects to an **Enterprise Site**. **Enterprise Site #1** and **Enterprise Site #5** are shown. Each Enterprise Site contains a **Router** (10/100baseT) and a **Checkpoint Appliance**. Additionally, each Enterprise Site is connected to a **Headquarters** site. The **Headquarters** site contains a **Sun E250 w/ Firewall-1** and a **Router** (10/100baseT). The **Headquarters** site is connected to the **Enterprise Site** via a **T1** line (56 Kbps). The diagram also shows a **Service Provider NOC** connected to the **SP Backbone** via **OC3s**.

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FIG. 11

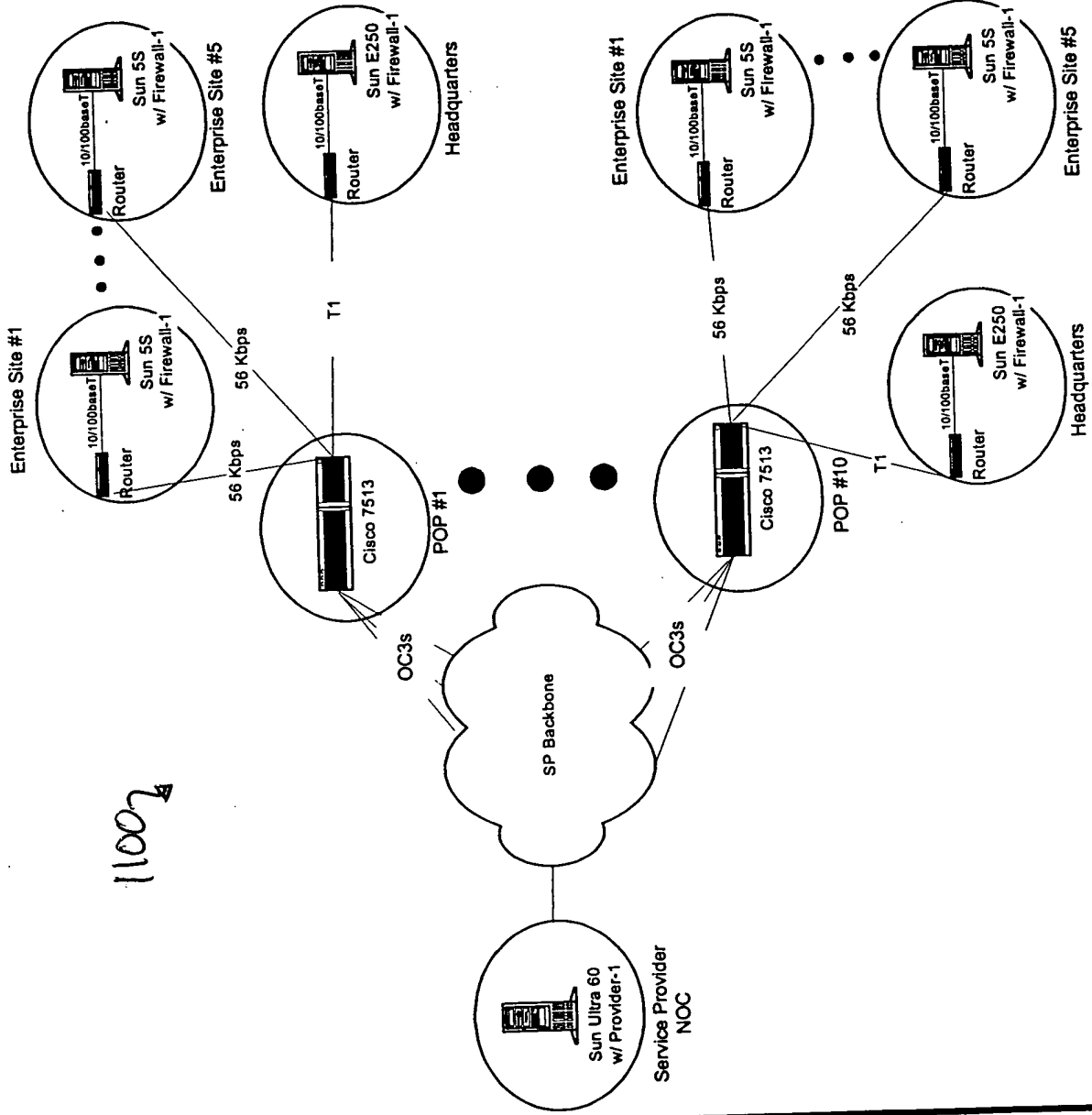




FIG. 13

13002

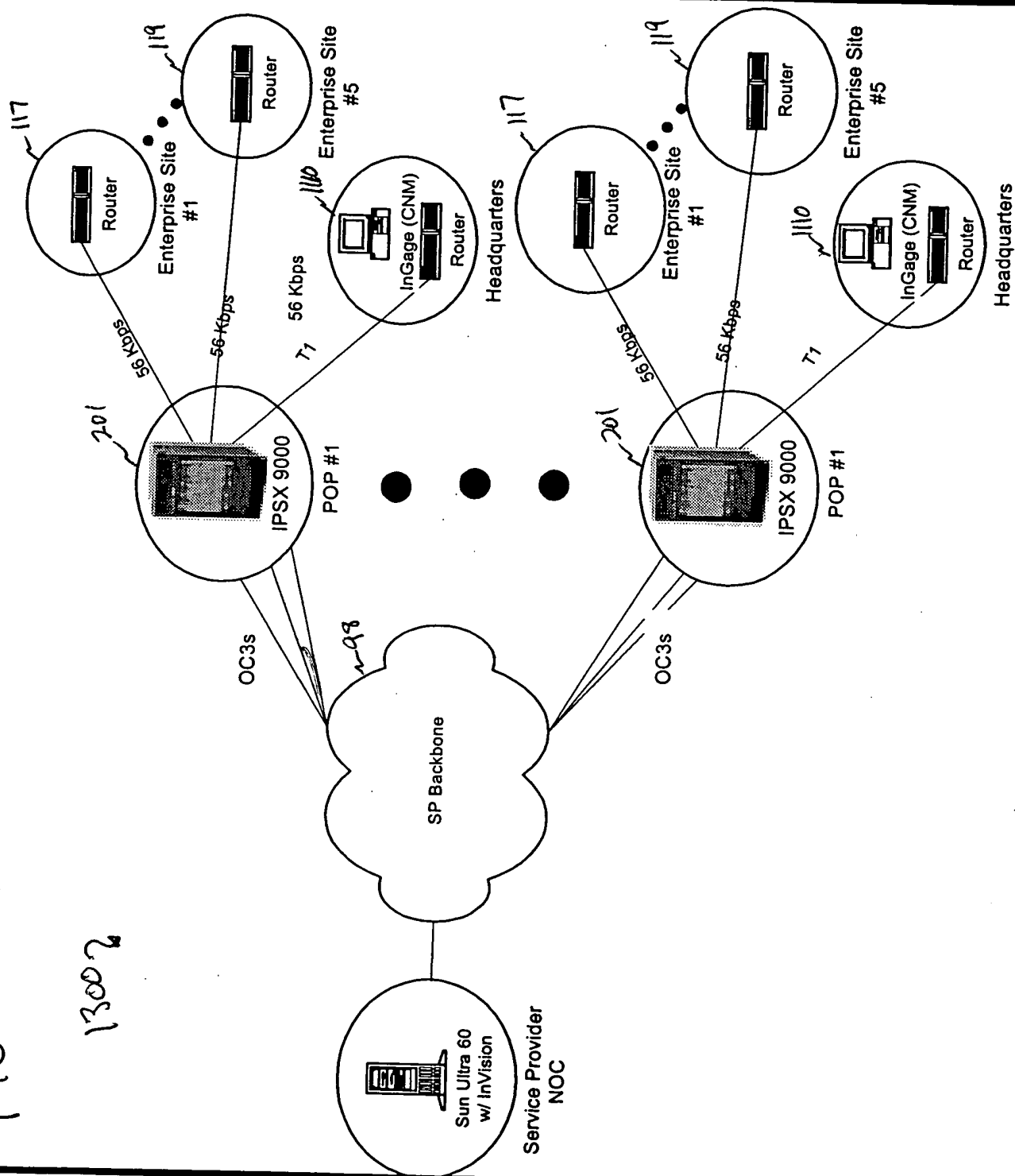


FIG. 14

14002

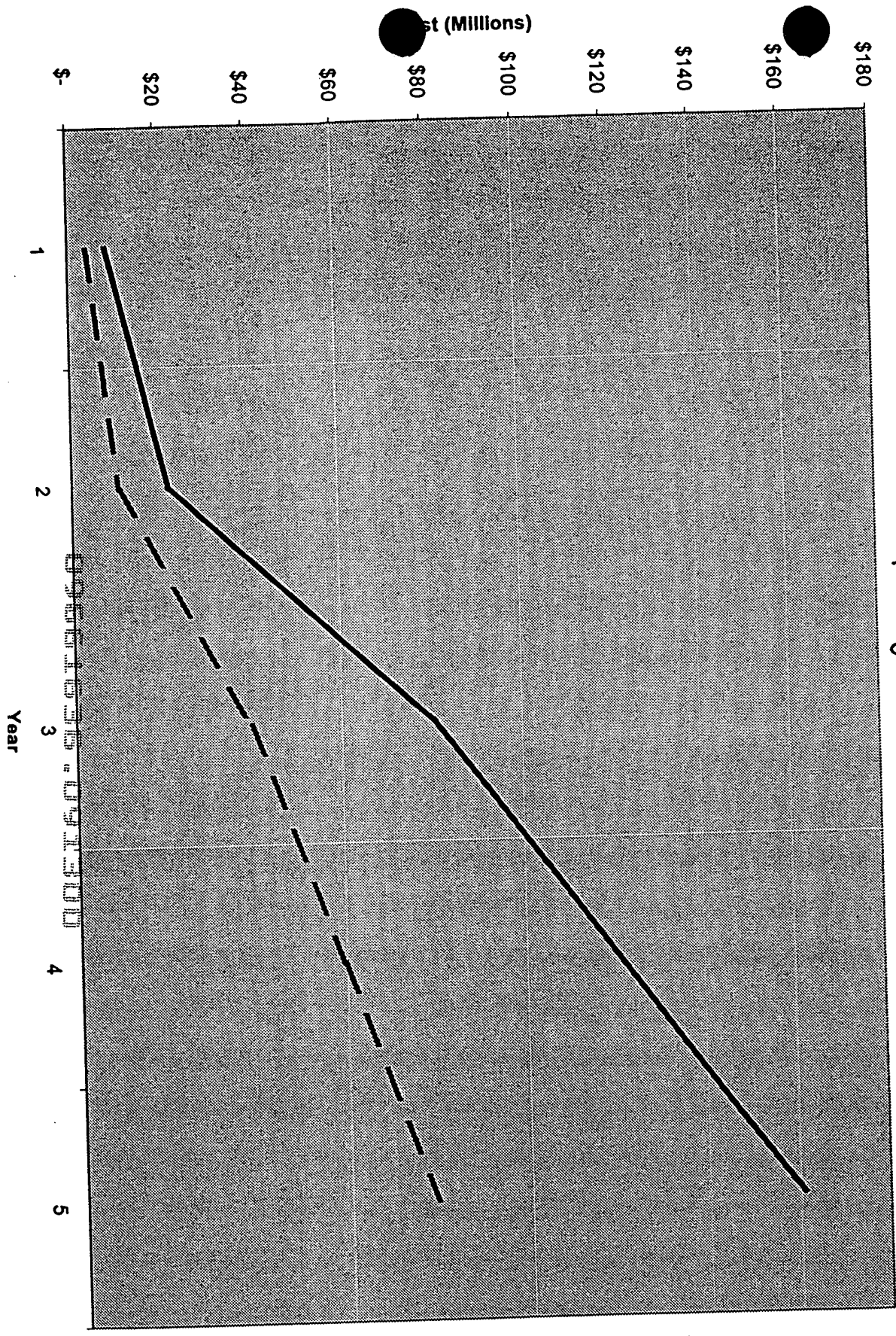
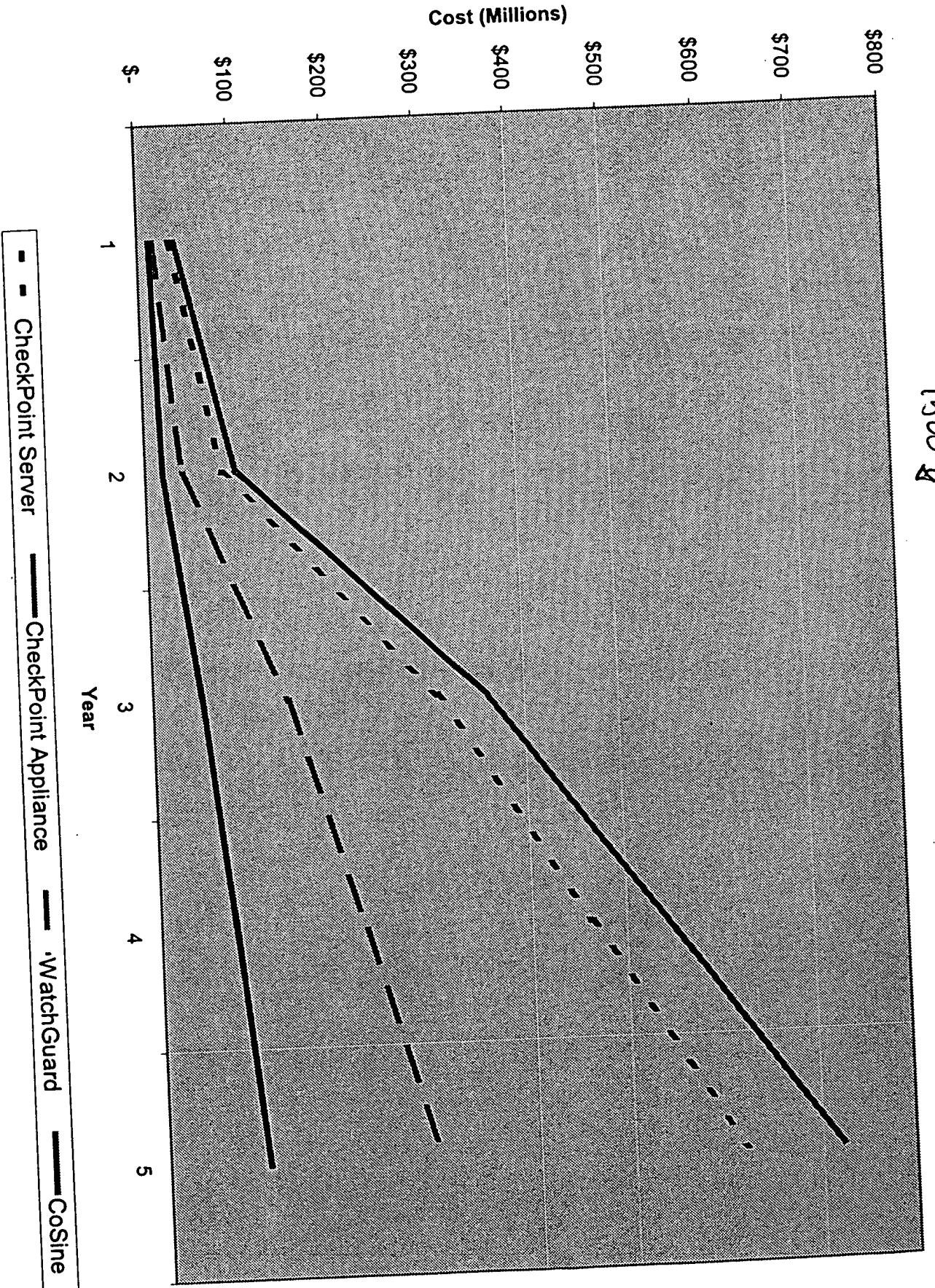


FIG. 15

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